

STATE OF MISSOURI
Matt Blunt, Governor • Doyle Childers, Director
DEPARTMENT OF NATURAL RESOURCES

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FEB 22 2005

Mr. Rick McDow, Chief
National Operations Center
Civil Air Patrol
105 South Hansell Street, Building 714
Maxwell AFB AL 36112-6332

RE: Request for Civil Air Patrol (CAP) Hyperspectral Imagery (HSI) Collection

The Missouri Department of Natural Resources, in cooperation with the University of Missouri-Columbia (UMC), the U.S. Environmental Protection Agency (EPA) Region VII, and EPA's Office of Emergency Preparedness, Prevention and Response, is conducting a Pilot Project to evaluate the application of HSI to characterizing chemical contamination. Following an accidental or deliberate release of hazardous materials, it is critical to quickly determine the type and extent of contamination. Floods spread contamination over large areas, and characterizing the hazards and damage in a timely manner would be nearly impossible with existing ground based systems and limited personnel. Characterizing existing contamination on federal, state, and commercial lands is also a challenge for our limited state and federal environmental personnel, given the vast areas and variety of terrain. The enclosed Pilot Project quarterly report provides an overview of this project and its timelines.

Commercial airborne HSI has been used for some environmental analysis, but budgets have limited its use by state and federal agencies. CAP's acquisition of the HSI capability has a potential to significantly expand federal and state access to the technology, and allow an assessment of the cost effectiveness for expanded use. This pilot project is a first step in evaluating these applications. Initial contacts with different federal agencies in Missouri has generated interest in the pilot project to support on-going studies, particularly related to lead and other mineral contamination from mining, and the affects of dust and runoff on surrounding areas, roads, residential areas, streams and rivers. These studies, in addition to the many other environmental cleanup projects could benefit from the pilot project.

The department proposes three missions for HSI collection, focusing on the following three seasonal settings.

Early March. This time provides a pre-foliage observation to analyze surface contamination with minimal vegetation. Most of our prospective target areas for this mission will have some tree canopy for the remainder of the project. Contamination situations exist in both residential and commercial areas. Calibration against known tailings sites, and coverage of streams and riverbanks before the spring rains will be primary targets. We will coordinate with the department's Environmental Emergency Response (EER), watching for live spills in the collection area to evaluate near-real time characterization and support application. Accidents

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involving hazardous materials and hazardous waste transporters occur periodically around the state.

June - July. Depending on whether the March mission is flown, this collection would be conducted in either early or late summer. Areas that have no vegetation year-round, sites where vegetation stress is an indicator of environmental contamination, extending coverage from the ground truth contaminated areas developed in March to suspect areas, and addressing other target types would be some objectives during this period. Near-real time EER collection will again be attempted.

August - September. During this time of year, run-off from contaminated areas affects many programs and agencies. Some objectives of this mission include evaluating previously imaged run-off areas for changes, evaluating signatures against suspect sites and addressing other target types not previously covered. Near-real time EER collection will again be attempted.

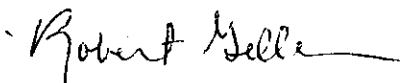
If possible, each mission should be conducted over a two-day period, with the majority of collection scheduled for two hours before and after solar noon. The two-day approach will allow collection in more sections of the state. We recently completed a collection options meeting with U.S. Geological Survey, UMC and department personnel. If the March mission is approved, we will hold a planning meeting the week of February 28, 2005. We would like to conference with your mission planner to understand the system's capabilities and how to best optimize collection.

The department has \$20,000 designated for HSI collection. We understand that we will be responsible for aircraft operating expenses and crew accommodations. Preliminary estimates indicate that the HSI collection budget will support the three missions. However, if costs are higher than expected, the number of missions or the two-day profile will be reduced to remain within the budget.

We look forward to working with the CAP on this pilot project. If you have any questions or comments please do not hesitate to contact Mr. Nick Carbone of my staff at (573) 751-2506, or you may direct written inquiries or comments to P.O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

HAZARDOUS WASTE PROGRAM



Robert Geller
Interim Director

BW:bgd

Enclosure: OSWER quarterly report